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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/608,755	06/30/2003	John J. Rusek	AFB00677	7180

29922 7590 11/02/2004

ESC/JAZ
U.S. AIR FORCE
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EXAMINER	
JOHNSON, CHRISTINA ANN	

ART UNIT	PAPER NUMBER
1725	

DATE MAILED: 11/02/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)
	10/608,755	RUSEK, JOHN J.
	Examiner	Art Unit
	Christina Johnson	1725

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *30 June 2003*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-21* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-21* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Claim Rejections - 35 USC § 112

1. The following is a quotation of the second paragraph of 35 U.S.C. 112:

> The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

2. Claims 7-17 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

3. Claim 7 recites the limitation "porous [monolithic] ceramic carrier" in step (b). This limitation renders the claim indefinite because it is not clear whether the "monolithic" is require or optional. For the purposes of search and examination, the claims has been examined as though monolithic is optional, i.e. "porous ceramic carrier," which is consistent with the rest of the claim.

4. Claim 13 recites the limitation "herein particles." This limitation renders the claim indefinite because it is not clear what applicant is describing as herein particles.

Claim Rejections - 35 USC § 102

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

2. Claims 1, 4, and 5 are rejected under 35 U.S.C. 102(b) as being anticipated by Coeckelberghs et al.

Coeckelberghs et al. (US 4,752,461) discloses a process and apparatus useful in the decomposition of liquids such as hydrogen peroxide. The reference teaches that an aqueous solution of hydrogen peroxide is introduced into a reactor containing solid particles of a hydrogen peroxide decomposition catalyst in order to form a mixture containing oxygen and water vapor (column 4, lines 55-65).

Suitable decomposition catalysts include catalysts based on metals or oxides of silver, manganese, chromium, and cobalt, supported on a porous carrier such as silica, alumina, and alumino-silicates (column 5, lines 40-65). With reference to the language of the claims, "a calcined cation" is considered to be the metal oxide form of the metals recited in instant claim 1, as described in the instant specification. Therefore, the metal oxides taught by the reference are considered to meet the limitation "a calcined cation."

It is further taught that the catalyst particles can take various forms, including bars, tablets, extrudates, granules, or spheres (column 6, lines 8-10). With reference to the Figures, it is taught that the catalyst is placed into a reactor which is vented to discharge the decomposition products and which is in communication with a pressurized hydrogen peroxide storage tank. Refer also to columns 7-8.

As each and every element of the claimed invention is taught in the prior art as recited above, the claims are anticipated by Coeckelberghs et al.

Claim Rejections - 35 USC § 103

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

4. Claims 2-3 are rejected under 35 U.S.C. 103(a) as being unpatentable over Coeckelberghs et al. as applied to claims 1, 4, and 5 above, and further in view of either Nakajima et al. or JP 3-218904.

The teachings of Coeckelberghs et al. are as described above for claims 1, 4, and 5.

Coeckelberghs et al. does not teach that the hydrogen peroxide decomposition catalyst further contains a promoter selected from Groups I and II of the Periodic Table of Elements.

Nakajima et al. (US 4,861,560) teaches that known hydrogen peroxide decomposition catalysts contain manganese compounds such as manganese dioxide or potassium permanganate (column 1, lines 12-17).

JP 3-218904 teaches a hydrogen peroxide decomposition catalyst which may be MnO_4 or potassium permanganate. Refer to the translated abstract.

It would have been obvious to one having ordinary skill in the art at the time the invention was made to have modified the method of Coeckelberghs et al. to include the use of a catalyst containing potassium permanganate because Nakajima et al. or the JP reference disclose that the use of potassium permanganate is the functional equivalent

of the manganese oxide taught by Coeckelberghs et al. for the decomposition of hydrogen peroxide. It is the position of the examiner that the substitution of art recognized functional equivalents would have been obvious to one of ordinary skill.

5. Claim 6 is rejected under 35 U.S.C. 103(a) as being unpatentable over Coeckelberghs et al. as applied to claims 1, 4, and 5 above, and further in view of Bernard et al.

The teachings of Coeckelberghs et al. are as described above for claims 1, 4, and 5.

Coeckelberghs et al. does not teach the use of the catalyst in a vehicle as claimed.

It would have been obvious to one of ordinary skill in the art at the time the invention was made to have used the catalyst taught by Coeckelberghs et al. in a vehicle such as a rocket because of the teaching by Bernard et al. (US 3,887,696) that the use of hydrogen peroxide decomposition catalysts are conventionally used in rockets. Refer to column 1, lines 18-55 of '696. It would therefore have been obvious to use any known catalyst such as those described by Coeckelberghs et al. in such a vehicle.

6. Claims 7, 10-13, and 18 are rejected under 35 U.S.C. 103(a) as being unpatentable over Coeckelberghs et al. in view of Kuhl et al.

Coeckelberghs et al. (US 4,752,461) discloses a process and apparatus useful in the decomposition of liquids such as hydrogen peroxide. The reference teaches that an aqueous solution of hydrogen peroxide is introduced into a reactor containing solid

particles of a hydrogen peroxide decomposition catalyst in order to form a mixture containing oxygen and water vapor (column 4, lines 55-65).

Suitable decomposition catalysts include catalysts based on metals or oxides of silver, manganese, chromium, and cobalt, supported on a porous carrier such as silica, alumina, and alumino-silicates (column 5, lines 40-65).

It is further taught that the catalyst particles can take various forms, including bars, tablets, extrudates, granules, or spheres (column 6, lines 8-10). With reference to the Figures, it is taught that the catalyst is placed into a reactor which is vented to discharge the decomposition products and which is in communication with a pressurized hydrogen peroxide storage tank. Refer also to columns 7-8.

Coeckelberghs et al. does not teach the step of contacting the catalyst carrier with catalyst cations sufficient to impregnate the surface, drying the impregnated carrier, and calcining the carrier, prior to contacting the catalyst with hydrogen peroxide, as required by claims 7 and 18. Coeckelberghs et al. does teach that the method of making the decomposition catalyst is not limited and suggests that known methods of preparation may be used (column 5, lines 55-60).

Kuhl et al. (US 3,884,836) teaches a hydrogen peroxide decomposition catalyst containing manganese, cobalt, copper, silver, and lead, which may be carried on a support material such as alumina or aluminum silicate (column 2, lines 45-60 and column 3, lines 5-12). It is taught that the catalyst is prepared by contacting the porous support material with dissolved salts of the catalyst cations to impregnate the carrier,

drying the impregnated carrier, and calcining the dried carrier at 400 degrees C to convert the metal salts to metal oxides (column 3, lines 18-52).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to have modified the method taught by Coeckelberghs et al. in light of the teachings of Kuhl et al. Kuhl et al. teaches that it is known to prepared a hydrogen decomposition catalyst by impregnating the carrier with dissolved salts of metals. One would have been motivated to modify the method of Coeckelberghs et al. to include such a step because Kuhl et al. teaches a method of making a product desired by Coeckelberghs et al. Because both catalyst comprise the same components and are used in the same process, one would have reasonable expectation of success from the combination.

The modified teachings of Coeckelberghs et al. further do not disclose the metal cation concentration. It is the position of the examiner that one of ordinary skill would appreciate that the effectiveness of the catalyst for the decomposition of hydrogen peroxide would depend upon the amount of the active material present in the catalyst. It would have been obvious to one having ordinary skill in the art at the time the invention was made to choose the instantly claimed ranges through process optimization, since it has been held that there the general conditions of a claim are disclosed in the prior art, discovering the optimum or workable ranges involves only routine skill in the art. See *In re Boesch*, 205 USPQ 215. One would have been motivated to do so to obtain the best results from the catalyst.

7. Claims 8-9 and 19-21 are rejected under 35 U.S.C. 103(a) as being unpatentable over Coeckelberghs et al. in view of Kuhl et al. as applied to claims 7, 10-13, and 18 above, and further in view of either of Nakajima or JP 3-218904.

The teachings of Coeckelberghs et al. in view of Kuhl et al. are as applied above for claims 7, 10-13, and 18 above.

The modified disclosure of Coeckelberghs et al. further does not teach the use of at least one catalytic promoter selected from Groups I and II of the Periodic Table.

Nakajima et al. (US 4,861,560) teaches that known hydrogen peroxide decomposition catalysts contain manganese compounds such as manganese dioxide or potassium permanganate (column 1, lines 12-17).

JP 3-218904 teaches a hydrogen peroxide decomposition catalyst which may be MnO_4 or potassium permanganate. Refer to the translated abstract.

It would have been obvious to one having ordinary skill in the art at the time the invention was made to have further modified the method of Coeckelberghs et al. to include the use of a catalyst containing potassium permanganate because Nakajima et al. or the JP reference disclose that the use of potassium permanganate is the functional equivalent of the manganese oxide taught by Coeckelberghs et al. for the decomposition of hydrogen peroxide. It is the position of the examiner that the substitution of art recognized functional equivalents would have been obvious to one of ordinary skill.

8. Claims 14-17 are rejected under 35 U.S.C. 103(a) as being unpatentable over Coeckelberghs et al. in view of Kuhl et al. as applied to claims 7, 10-13, and 18 above, and further in view of Bernard et al.

The teachings of Coeckelberghs et al. in view of Kuhl et al. are as applied above for claims 7, 10-13, and 18 above.

The modified disclosure of Coeckelberghs et al. further does not teach the use of the catalyst in a vehicle as claimed.

It would have been obvious to one of ordinary skill in the art at the time the invention was made to have used the catalyst taught by Coeckelberghs et al. in view of Kuhl et al. in a vehicle such as a rocket because of the teaching by Bernard et al. (US 3,887,696) that the use of hydrogen peroxide decomposition catalysts are conventionally used in rockets. Refer to column 1, lines 18-55 of '696. It would therefore have been obvious to use any known catalyst such as those described by the modified teachings of Coeckelberghs et al. in such a vehicle.

Conclusion

5. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Christina Johnson whose telephone number is (571) 272-1176. The examiner can normally be reached on Monday-Friday, 7:30-5, with Alternate Fridays off.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Tom Dunn can be reached on (571) 272-1171. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Christina Johnson
Patent Examiner
Art Unit 1725
10/29/04

CAJ
October 29, 2004